



# SURVEY OF FUNGAL INFECTION IN FRESHWATER FISHES OF GODAVARI RIVER IN NANDED DISTRICT (M.S.) INDIA

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## ABSTRACT

The present investigation deals with the fungal disease of fresh water fishes in Godavari river of Nanded district from September-2013 to February-2014. Total 968 fish specimens where about 168 fishes under 9 fish species (5 culturable and 4 non culturable) were infected fungal disease. Among culturable species most fungal infected fishes was *C.mrigala* (23.81%) , *L. rohita* (17.02%) and *C.idellus*(12%) Among non culturable species the most fungal infected *C.punctatus* (28.57%) *C.striatus* (15%) *P.ticto*(13.33%) Infection in culturable fish species was less (16.14%) than non culturable species (17.35%) Three genera of fungi were identified were *branchiomyces* sp. was associated with gill rot disease and *saprolegnia* sp. and *aphanomyces* sp. were associated with ulcer types of disease. The incidence (%) disease was highest in the month January (36.76%) followed by December (34.58%) and November (27.59%).

**KEYWORDS:** Fish culture ponds, fungal diseases, aquatic macrophytes, infected fish and incidence.

## INTRODUCTION:

Diseases in freshwater fishes in Nanded are a great threat to achieve optimum production and become a limiting factor to economic success of aquaculture. The open water capture fish has been suffering from various types of diseases such as septicemia, tail and fin rot disease, gill rot disease, viral disease, bacterial disease and fungal disease (Chowdhury 1993, 1997). Fungi, which cause fungal disease, are present in salt or freshwater. In most cases, fungi serve a valuable ecological function by processing dead organic debris. However fungi can become a problem if fish are stressed by poor nutrition, pressure of population and over exploitation of fishes. Fungal infections of freshwater fish are common and distributed worldwide and associated with immune suppression. Fungal diseases are easily recognized by relatively superficial, colony of fluffy growth on the skin and gill of fishes. Research on fungal disease in relatively new but a few number of research work has been conducted on specific region. Therefore the present study has been aimed to isolate, identify and determine the pathogenocity of the fish and survey of infected due to infection of fungal diseases of Godavari river in Nanded district.

## MATERIAL AND METHODS:

**Study area:** for the investigation, Godavari River in Nanded district was selected as a study area.

**Collection of diseased fishes:** The diseased fishes were collected randomly every week at regular interval from the study area. Data were collected from fish farmers, fishermen and fish traders about fish disease. Secondary information on fish disease was collected from FDO of the study area.

**Sampling techniques:** The infected fishes were identified by the symptoms of fishes such as loss of normal glaze; spot having hemorrhagic lesions on their body, excess mucus secretions, discoloration of gill filament and damage of gill. For the isolation of fungus fishes were carried to the laboratory immediately after collection.

## Isolation of fungus:

PDA (Potato Dextrose Agar) media was used as a culture media for the isolation and to find out the fungus. At first infected fishes were cut in cross section, using a flamed scalpel. A petridishes, washed with 15ml distilled water. Then the tissue blocks were transferred into the culture media petridishes. Then petridishes were inverted with parafilm and kept in incubator at 25°C for 3 days, until a circular fungal mat developed. These were used during subculture of the fungus. A suitable portion of culture plates of different colony from PDA was taken out with the help of forceps or needle and put on a slice in 1 or 2 drops at cotton blue on clear slide. Then it was warmed by spirit lamp 6-8 times and it was then examined under a compound microscope. Incidence of fungal disease of infected fishes was calculated by following formula:

$$\text{Incidence(\%)} = (\text{No. of fish infected} / \text{No. of fish examined}) \times 100$$

## RESULTS AND DISCUSSION:

It was observed that a total of 968 fish specimens of which 168 species (5 culturable 4 non culturable) were infected with fungal disease. It was observed that the fungal disease of culturable fish was less 16.14% than the non-culture fish species 17.35% *C. punctatus* was most susceptible to fungal disease showing incidence as 28.57% followed by *C.mrigala* 23.81% whereas *C.batrachus* least susceptible (8.33%) The infected fish species and their incidence (%) are shown

in table 1.

During the study period three genera of fungus such as *Saprolegnia*, *Aphanomyces* and *Branchiomyces* were identified from dermal lesion, gill of the studied infected fish specimens where *Saprolegnia* and *Aphanomyces* were associated with ulcer type disease of lesion and *Branchiomyces* was associated with gill rot disease. All types of pathogenic fungus were identified from, *L. rohita*, *C. catla*, *C.mrigala*, *Saprolegnia* and *Aphanomyces* were identified from *C.punctatus*, *C. striatus*, *C.batrachus*. *Saprolegnia* and *Branchiomyces* were isolated from *Cyprinus carpio* var. *communis*. *Aphanomyces* and *Branchiomyces* were isolated from *C. idella* and only *Saprolegnia* was isolated from *P.ticto*.

**Table 1.** Fungal disease infected fish species and their incidence of the study area during the study period.

Sr. No.	Species	No. of fish		Incidence (%)
		Observed	Infected	
Culturable species				
01	<i>C.catla</i>	70	8	11.4
02	<i>L.rohita</i>	47	8	17.02
03	<i>C.mrigala</i>	168	40	23.80
04	<i>C.idellus</i>	100	12	12
05	<i>C.carpio</i> var. <i>cummunis</i>	98	10	10.20
Sub total		483	78	16.14
Non-culturable species				
06	<i>P. ticto</i>	150	20	13.33
07	<i>C.punctatus</i>	175	50	28.57
08	<i>C.striatus</i>	100	15	15
09	<i>C.batrachus</i>	60	5	8.33
Sub total		485	90	18.55
Total		968	168	17.35

**Table 2.** Monthly variation of incidence of fungal disease fish during the study period.

Month	Number		Incidence (%)
	Observed	Infected	
September	215	17	7.91
October	220	20	9.09
November	145	40	27.59
December	107	37	34.58
January	68	25	36.76
February	213	29	13.61
Total	968	168	17.35

It was observed that the freshwater fishes of Godavari river species suffer from three types of fungal diseases including *Saprolegniasis*, *Aphanomyces* and *Branchiomyces* were found during the study period. Among them *C. punctatus* and *C. striatus* were most infected species. It is almost similar with Alam et al. (2003) who found that *C. mrigala* and *C. striatus* were most severely infected fishes. *Saprolegnia* sp. and *Aphanomyces* sp. were recovered from ulcer type lesion affected fishes and *Branchiomyces* sp. recovered from affected gill. Infections of fish were frequently associated with wounds or lesion and handling damage of fish skin may predispose them to infection. Chinabut (1994) isolated this species of fungi from EUS affected fish where *Aphanomyces* sp. was isolated from natural lesions. Willoughby et al. (1994) reported that *Aphanomyces* sp. Pathogen was isolated from *L. rohita*, *C. punctatus* and *C. striatus* of *Aphanomyces* sp. were recovered from the surface lesion of EUS infected fish. The types of ulcers produced in fish from India and Pakistan have been associated with pathogenic fungus *Saprolegnia* sp. (Anonymous, 1992 and Rab et al. 2001). Jewel and Affan (2003) found that *Aphanomyces* sp. and *Saprolegnia* sp. Were common pathogens in *L. rohita*, *C. catla*, *P. gonionotus* and *C. punctatus*. Bruno and wood (1994) stated that *Saprolegnia* sp. has great impact on aquaculture especially it can infect carp and *Tilapia* which strongly supported the present study. It was observed that *Branchiomyces* sp. recovered from affected gill of the infected fish species which caused the gill rot disease. Roberts et al. (1993) stated that gill rot disease is primary problem in many freshwater carp fishes and it was found when fish suffering from an environmental stress Chinabut (1994) worked on EUS and she that this disease outbreak every year during November to February in Thailand. Barua (1994) reported that *Saprolegnia* sp. can grow at temperature ranging from 32°F to 95°F where poor water quality such as low circulation, low Do, or high ammonia are associated with *Saprolegnia* sp. infections.

### CONCLUSION:

It was observed that fungal disease varied in different months. The infestation rate was found to be high during the winter season. From the survey and histopathological findings, *Channa punctatus* was the most severely affected species, followed by *Cirrhinus mrigala* and *Labeo rohita*. *Clarias batrachus* was the least affected species. In present investigation fungal diseases appeared as a serious threat to the freshwater fishes in the study area which affected their biodiversity through being endangered and extinct.

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